CNA ANC

**Canadian Nuclear Association**

# *Response to the Federal Finance Minister's "A New Direction for Canada"*

and

## *Executive Brief to Federal Government "The Canadian Nuclear Industry — A National Asset"*

**March 1985**

**Prepared by:**
**Public and Government Affairs Committee**
**Canadian Nuclear Association**

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# *Executive Brief to Federal Government "The Canadian Nuclear Industry — A National Asset"*

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Disponible en français.

## THE CANADIAN NUCLEAR INDUSTRY — A NATIONAL ASSET

Over a period of 40 years Canada has developed a remarkable nuclear industry. In keeping with our mining heritage, we are the world's leading uranium producer, with the highest grade orebodies in existence still waiting to be tapped. In the realm of high technology development, our CANDU reactor is second to none. Year after year Canadian CANDUs dominate the "top 10" performance records worldwide. The nuclear industry has created direct employment for over 30,000 Canadians. The "high tech" sectors of the industry are now vigorously seeking export markets for their products and services. As the world recovers from the recent prolonged recession, electricity demand is rising. Once again electricity is the engine of growth. Already utilities are planning to add new generating capacity. Canadian nuclear resources, technology and skilled people are proven and available. By seizing the opportunities which are opening up for us, a properly recognized nuclear industry can make a vital contribution to Canada's economic renewal. We seek Federal Government leadership in forging broad national and international recognition of Canada's nuclear industry.

### Why has this brief been written?

This brief has been prepared by the Canadian Nuclear Association (CNA) in response to the challenge issued to Canadians in Finance Minister Michael Wilson's document "A New Direction for Canada". This brief responds in terms of the major policy issues and opportunities as seen by the Canadian nuclear industry. In a companion document we have replied to "A New Direction for Canada" following point by point the structure laid out by the Finance Minister. We believe that these complementary CNA documents demonstrate the nuclear industry's readiness to contribute to the national economic debate.

## What are the facts regarding the contribution of the nuclear industry to the Canadian economy?

### Uranium

Canada is once again the world's leading uranium producer (11,000 tonnes in 1984) with a mining industry employing more than 7,000 people. In future it will earn for Canada over $1 billion per year from exports. It has proven, untapped uranium resources which will ensure our dominant position in world markets into the next century. It provides a highly valued energy resource for Canada. The uranium mining industry deserves full government support in efforts to achieve optimum domestic and export performance.

### Power from uranium

Our CANDU reactor sets the world standard in terms of performance and safety. These achievements are the result of many years of dedicated effort. Over this time the Federal Government has invested a total of $2.6 billion in developing the many aspects of the nuclear industry. The benefits earned are impressive. In Ontario alone, cumulative energy cost savings since Pickering started up in 1971 are about $2 billion and foreign exchange savings $4 billion. By 1995 the savings from all nuclear power plants in operation in Ontario alone are expected to reach $1 billion a year in generation costs and $2 billion a year in foreign exchange. It is quite evident that the Government's initial research and development investment has already paid off handsomely and will continue to return benefits to the economy for as long as CANDU stations meet the increasing demand for reasonably priced electricity. The electrical output generated by Canada's reactor powered plants is significantly cheaper than that from any thermal option available to the Eastern provinces. Nuclear powered electricity production deserves henceforth proper consideration in Canada's national energy policies.

### Radioisotopes in medicine and industry

Canada has always excelled in the application of nuclear technology to medicine. From the pioneer development of Cobalt 60 cancer therapy machines, we have now become the world's major producer of radioisotopes for use in diagnostic nuclear medicine. As the leading producer of Cobalt 60, Canada is continuing to build equipment for the irradiation of food, medical supplies and other industrial applications In 1984, AECL exported more than $80 million of these products. There are excellent opportunities to continue this humanitarian effort world-wide.

### Economic impact

The nuclear industry directly provides 31,000 jobs for Canadians (down from 38,000 in 1981). Their efforts, through the corporations and utilities they serve, contribute $3.6 billion in economic activity to the Canadian economy each year. In this respect the nuclear sector ranks with national industries such as smelting and refining and the manufacture of communication equipment or of automobile parts.

The nuclear industry has proved its performance in Canada's energy sector in that all CANDU reactor power projects and uranium mining/processing/refining plant developments have been successfully completed and are positive contributions to the national economy. Since 1970 the industry has built 14 nuclear reactors in Ontario, Quebec and New Brunswick for a capital investment of more than $14.5 billion and construction employment of about 100,000 person-years. In addition, seven uranium mines and two processing plants have been brought into production for a capital investment of $3.1 billion and construction employment of 12,200 person-years. Ontario Hydro's Darlington nuclear power plant is presently the largest single energy project under construction in North America. All of this nuclear related construction has provided massive economic activity with all the benefits that this entails. There is value in providing continuity of activity in such an important industry, particularly as it provides Canada with economic and technical winners.

## What are the strategic opportunities for Canada inherent in the nuclear industry? What should government do?

1. The export of uranium and nuclear electric power generating plants.

   As the world recovers from the recent economic recession electricity demand is now growing. The IAEA has estimated that installed nuclear power generation worldwide will increase 2-3 times by the year 2000. To meet this situation and benefit from the opportunity, it is vital that Canada;

(a) Adopt a marketing stance which will protect the long term contracts of the Eastern Canadian uranium producers and enable the high grade ores from Saskatchewan to find new world markets.

(b) Continue vigorous support for CANDU reactor exports based on the superior performance record of the Canadian developed system which will continue to make it a strong contender as export markets recover. Traditionally CANDU has held a 5% share of the world market for reactors from which AECL estimates that 6 GWe of CANDU plant will be committed by the year 2000. With a more vigorous national effort, AECL is confident that Canada can capture a larger share of the 21 to 29 GWe reactor market which is potentially open to the CANDU system during that time period. Appropriate financing will remain a major challenge and the Federal Government should encourage full mobilization of Canada's banking resources in support of valued export sales.

2. Energy Exports from Nuclear Plants.

   Electricity exports to the United States represent an opportunity requiring Federal participation in terms of ensuring an appropriate climate to encourage energy exchanges with the U.S. The Canadian Government can

assist in resisting excessive protectionist policies from U.S. agencies such as the Department of Energy, Federal Energy Regulatory Commission and others.

There is widespread agreement that a second reactor at Point Lepreau in New Brunswick will satisfy a market export opportunity for electricity in New England, will stimulate national and regional economic activity, create needed employment, contribute to local development and generate foreign exchange earnings. The project has so much in Canada's favour, it most surely should proceed. The CNA urges the Federal Government to examine all the obstacles to its timely development with the intent of getting Point Lepreau 2 committed to construction by 1986. The success of Point Lepreau 1 has demonstrated that the risks from this project are entirely manageable and the CNA calls for the Federal Government to continue to provide the maximum support possible.

3. Canada's prime export position in non-energy nuclear technology can be sustained by continued R&D and marketing efforts by AECL. Aid programs could usefully support this basically human welfare contribution to the developing world.

4. Federal encouragement of the electrification of Canadian industry through determined development of the nuclear power alternative will improve industrial productivity through lower energy costs thus contributing to market competitiveness — an essential ingredient for Canada's export trade.

5. There is a multi-billion dollar world market for the nuclear power service industries. The Federal Government should participate through AECL in support of the efforts of the private sector in selling abroad the considerable specialized Canadian nuclear expertise which is today available.

So much for strategic opportunities and Federal Government stimulus. In the view of the CNA there are in addition a number of policy matters which require careful government attention. These cover the following issues:

1. Nuclear power deserves a more important role and recognition in Canadian national energy policy. Since the provinces have responsibility for electricity production, it is essential to have a high degree of federal-provincial cooperation in such areas as electricity exports, industrial electrification, electrical interconnection and overall energy planning.

2. The Canadian nuclear industry has always had a unique blend of public and private sector involvement, with Federal and Provincial agencies assuming the major role. AECL has always held a central position in the reactor industry and still controls a number of vital elements. With today's short and intermediate term market uncertainties, it is essential that AECL evolves to allow the nuclear industry as a whole to meet all challenges and thus maintain the elements essential to the ongoing CANDU program. A positive response by the Federal Government to match AECL objectives with those of industry could be most productive.

3. Canada's uranium export marketing policies have been developed over 40 years. At present Canada maintains production from Ontario and Saskatchewan mines which can be characterized as totally different enterprises with a common product. To avoid upsetting the potentially delicate balance between sources of supply, we urge the Federal Government not to change export marketing policies until there has been extensive consultation with all parties.

4. The nuclear industry is one of the most heavily regulated in Canada. In the international sphere Canadian non-proliferation and safeguards requirements are among the most stringent. This places Canadian exporters at a distinct disadvantage in trying to compete with foreign suppliers who operate under more relaxed policies. We are not asking the Government to change its safeguards policies. However we do urge the Canadian Government to continue working actively towards a common set of trading rules for all nuclear supplier nations.

Domestically the industry is overseen by a number of federal and provincial agencies. To ensure the safety of workers, the public and the environment, industry supports scientifically based, rational regulation, which has demonstrated cost effectiveness. The Canadian regulatory approach has been to use international safety recommendations in order to establish Canadian nuclear regulatory standards. It is then the responsibility of the nuclear licencee to build and operate his facility within these safety standards. The Canadian nuclear industry has always supported this approach, finding it far preferable to alternative regulatory systems used in other countries. Unfortunately in recent times there has been a disturbing tendency to move to prescriptive regulation whereby regulatory limits are established and industry is told how to achieve the targets. In our view, telling industry how to run its business can only reduce its productivity and competitive position.

The CNA urges the Federal Government to review jointly with the Provincial Governments the basis of safety standards, set long-term goals and establish a regulatory agenda in order to bring greater stability and predictability to the regulatory process.

In summary, Canada has developed a world class nuclear technology and a leading industry which continues to play a vital role in the nation's economic activity. The CNA urges the Government to provide the industry with unqualified public endorsement and a policy environment in which it can participate fully and productively in Canada's economic renewal.

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## 1.0 INTRODUCTION

Throughout its 40 year history, the Canadian nuclear industry has played an increasingly important role in Canada's economy. The nuclear industry has become a mature and vital part of Canada's industrial structure through the partnership of the federal and provincial governments, and private and crown corporations.

The Canadian Nuclear Association on behalf of the industry welcomes the opportunity to respond to the Finance Minister's request for consultation with the business community particularly in view of his document, "A New Direction for Canada".

The nuclear industry can make a substantial contribution to the economic renewal of Canada by exploiting our four building blocks for the future:

- proven technologies;
- natural resources;
- human resources; and
- marketing skills.

This brief identifies strategic opportunities facing the nuclear industry at home and abroad and makes recommendations as to how they can be achieved.

## 2.0 THE CANADIAN NUCLEAR ASSOCIATION: A PARTNERSHIP OF INDUSTRY AND GOVERNMENTS

The Canadian Nuclear Association was founded in 1960 and as a trade association, represents a partnership among:

- private industry;
- provincial governments and their electric utilities; and
- the Government of Canada through various federal agencies.

The partnership was necessary at the outset of the industry. The federal government had made the pioneering scientific achievements upon which the industry would be built. Yet when the time came to put this science to work in the peaceful service of Canadians, the federal government respected the exclusive role of the provinces in the generation of electricity. At the same time, federal authorities realized that the development of the industry's technology and resources could best be achieved by harnessing the management skills and capital available in the private sector. Thus the partnership was born which has prospered through the past 25 years.

Today, the Canadian Nuclear Association (CNA) is a non-profit industry association representing more than 150 corporations, including seven provincial electric utilities. Membership ranges from uranium exploration and mining companies through the refining and fuel fabrication sector to the engineering companies which design and develop CANDU stations, the nuclear service companies, and to the provincial utilities which build and operate these reactors. Canadian manufacturers of reactor components, all private sector corporations, form the largest group of CNA members. As well, universities and many other research and governmental institutions with interests in nuclear energy belong to the CNA.

Member organizations are listed in Appendix A.

## 3.0 THE INDUSTRY AND THE ECONOMY

Canada's nuclear industry produces uranium, electricity, engineering and high-technology services, and nuclear technology for industry and medicine. The nuclear industry ranks among Canada's largest manufacturing enterprises. In 1983, the nuclear business conducted by CNA members generated over $3.6 billion in economic activity. In terms of economic stimulus, the nuclear industry is comparable to smelting and refining ($3.4 billion), industrial chemicals ($3.2 billion), and communications equipment manufacturing ($3.0 billion).

The nuclear industry directly employs 31,000 persons and indirectly employs an additional 55,000.

As well as contributing significantly to GNP and employment, the nuclear industry brings other economic advantages to Canada. Nuclear reactors provide Canada with a long-term, secure, indigenous energy source. By providing reliable, clean, efficient, low-cost electricity, CNA members help give Canadian industry a competitive edge in domestic and foreign markets. The industry provides spin-off benefits to other high technology industries. As well, uranium and other nuclear exports, combined with the $1 billion savings on imported fossil fuels by provincial utilities using reactors, contribute more than $2 billion to Canada's balance of payments each year.

The industry's economic activities benefit many regions — uranium mining in Saskatchewan and Ontario; uranium processing in Ontario; heavy water in Ontario and Nova Scotia; engineering, research and manufacturing in British Columbia, Manitoba, Ontario and Quebec; radiochemicals and equipment in Ontario and British Columbia; research establishments in Manitoba and Ontario; and nuclear power reactors in Ontario, Quebec and New Brunswick.

One of the industry's major economic contributions in Canada is its ability, in working with provincial utilities, to implement major construction programs. The nuclear industry, in this respect, has surpassed other industries. For example, during the past 15 years, while only one tar sands plant has been completed, the nuclear industry has built 14 reactors in Ontario, Quebec and New Brunswick representing a capital investment of more than $14.5 billion. Construction employment alone on these projects amounted to 99,000 person-years. The electricity produced by these reactors is cheaper than any thermal option available to these provinces.

In addition, seven uranium mines and two processing plants have been brought on stream representing a capital investment of $3.1 billion and employment of 12,200 person-years.

The nuclear industry has thus demonstrated its ability to plan and execute major energy projects and contribute substantially to job creation.

Today, Ontario Hydro's Darlington project is the largest single energy project underway in North America. The construction of a second reactor in New Brunswick represents a new opportunity to provide continuity in the development of high-employment energy projects.

## 4.0 RESPONSE TO "A NEW DIRECTION FOR CANADA"

In the sections which follow, the CNA presents its position on the challenges and directions for change raised by the Finance Minister in "A New Direction for Canada: An Agenda for Economic Renewal". The structure follows the agenda document by addressing each of the nine issue areas in Section IV "A Strategy for Economic Renewal". Within each section, a discussion of the current status on the issue is followed by the industry's recommendations.

## 4.1 RESEARCH AND DEVELOPMENT

As in all high-technology sectors of the economy, innovative research and development is a cornerstone of the nuclear industry. In our case, a successful indigenous technology has developed through co-operative efforts, which have benefited Canadian industries and the Canadian public.

Much of the research has been provided by Atomic Energy of Canada Limited particularly through the Chalk River Laboratories near Ottawa and the Whiteshell Nuclear Research Establishment at Pinawa, Manitoba. Other major research contributions have come from Ontario Hydro and Hydro Quebec. Because of the scale of these research efforts and the co-ordinated approach taken, many institutions and private firms have also participated as consultants or subcontractors. These organizations, in turn, have been able to apply the research to other areas of high-technology and industrial development. Nuclear research accounts for employment of approximately 3,450 highly skilled people, a major component of Canada's scientific community.

Funding of nuclear research has come from a mixture of public and private sources. Most of the funding for AECL research has been supplied by the federal government through parliamentary appropriations. From 1946 to 1984, federal government expenditures supporting nuclear research and development totalled $2.6 billion. The return on this investment substantially exceeds the government appropriations and includes the benefits of nuclear power, health, industrial and agricultural applications. For example, Canadian nuclear generating stations alone have saved electricity customers more than $2 billion over the cost of coal-generated power since the early 1970's. This potential is available to other provincial utilities in the future, should they decide to exercise the nuclear electricity option.

In comparison, research and development activities in support of the nuclear industry have cost roughly twice as much in the United Kingdom and Japan, four times as much in France and West Germany, and ten times as much in the United States.

In addition to developing a non-polluting, safe and economic domestic source of electricity, Canadian nuclear engineers have introduced such concepts as more efficient on-line refuelling during reactor operation; the vacuum building system as a safety precaution; separate, duplicate safety systems to shut down reactors; and the economic efficiency of multi-unit stations.

The nuclear program has contributed to the development of a Canadian high-technology base which has enhanced the perception of Canada's industrial capacity. A number of steps are being taken to further the third-party use of the industry's technology.

### Non-Energy Applications

Canadian nuclear research and development has also resulted in significant contributions in areas other than energy. Radioactive isotopes, produced in reactors and accelerators, are used in medical, industrial, food preservation and pollution control applications. Sales into these markets by AECL Radiochemical Company in fiscal 1984 totalled $80 million of which 90% was for export. Examples of such applications include the following:

#### 1. Medicine:

The industry's pioneering work in nuclear medicine has saved thousands of lives. AECL estimates that 500,000 patients in over 80 countries are treated annually using Canadian nuclear technology. The Canadian Cobalt 60 cancer treatment system in used worldwide with over 1,400 units installed representing 75% of the international market. In addition, AECL is the world's largest supplier of radioisotopes used in hospitals and clinics for a variety of medical tests. An estimated 10 to 12 million diagnostic procedures are carried out annually in Canada using AECL radioisotopes and worldwide, the number likely exceeds 300 million. Radiation is also a highly effective method for sterilizing medical products. AECL holds 90% of the world market for this radiation processing equipment.

#### 2. Industry:

Radioisotopes are used extensively by industry in quality control and process measurement. The petroleum industry uses them to test pipeline welds. The pulp and paper industry uses them to measure the thickness of paper. And many industries use them to trace the flows of materials through process systems.

#### 3. Agriculture:

Nuclear research and development has resulted in development of new plant strains, pest control techniques, more effective use of fertilizers and improved livestock vaccines.

**4. Food:**

Preservation of food is an area of extraordinary potential significance to Canada, the Third World and to our industry. Effective world food supplies could be increased by 50% by the elimination of spoilage, thus contributing greatly to the needs of starving populations. Food irradiation is as legitimate a means of foreign aid as shipments of wheat, dry milk and other bulk foods.

Adoption of food irradiation has been hindered by North American regulatory classification of irradiation as a food additive rather than a process, such as freeze-drying. The World Health Organization's Joint Expert Committee on the Wholesomeness of Irradiated Food has deemed it to be an acceptable food process. Rules for use of irradiation are currently under review by the U.S. Federal Food and Drug Administration. In Canada today, regulations permit irradiation of only spices, flour, onions and potatoes although other applications are being reviewed by federal authorities.

Given the starvation which is sweeping Africa and other parts of the world, it would be tragic if North American regulators continued to impede the use of this North American technology in countries in need of food. With a modest investment in increased financial support, Canada can make an enormous contribution to the urgent needs of the Third World.

**5. Environment:**

Nuclear research areas with high potential in the environmental area include the irradiation of municipal and industrial wastes to kill harmful organisms and the use of radioisotopes to trace the movements of poliutants. Although environmental protection is costly and less job-intensive than private sector employment growth, it remains an important objective for Canadians. The use of nuclear technology to assist in achieving this public policy objective may be more cost-effective for government and the taxpayer than current methods. It should not be ignored or condemned by environmentalists because it is 'nuclear'. An appropriate government attitude would support this opportunity.

**Priorities for Nuclear Research and Development:**

**The CNA recommends that public support of nuclear research and development be maintained for innovative technologies in areas which support and reinforce public policy.**

**1. Non-Energy Nuclear Technology**

**Specifically, the CNA recommends that public support be increased in research and particularly accelerated development of applications of nuclear technology in food preservation, agriculture, insect control and environmental protection to contribute both to the Canadian economy and to the food and wood fuel needs of the Third World.**

**2. Energy-Related Nuclear Technology**

**Further, the CNA recommends that public support be maintained to continue research and development with respect to:**

- **the transport, storage and disposal of radioactive wastes;**
- **further improving the operating efficiency of nuclear reactors;**
- **commercially attractive, moderately-sized power reactors;**
- **SLOWPOKE-type reactors for localized energy supply; and**
- **advanced fuel cycles and fusion to enhance Canada's technological capability to compete in the international market.**

## 4.2 EXPORT MARKETING AND FINANCE

Exports account for about half of the nuclear industry's annual contribution to Canada's gross national product. It is one of Canada's most export-oriented industries and therefore, the CNA welcomes the government's renewed interest in this vital road to growth.

Nuclear exports generally fall into five categories: uranium; nuclear services; medical, industrial and research products and technology; electricity; and power reactors and technology. In the first four categories, Canada is a world leader. In the latter however, the recent record is less favourable.

**Uranium Exports**

Canada has long been the world's leading uranium exporter but in 1984 it also became the largest uranium producing nation. The new mine at Key Lake, Saskatchewan came into full operation last year and markets were obtained to absorb all near-term production. Approximately 85% of all domestic production is exported with markets diversified among the Far East, Europe and the U.S. Production in 1984 exceeded 11,000 tonnes uranium, an increase of 56% from 1983, with a value of approximately $1 billion.

Four of the world's eight largest capacity uranium suppliers are Canadian. Canada's major competitors are, in order of production volumes, south and southwest Africa; the United States (the largest producer in 1980); and Australia (a distant fourth but with very large ore reserves and potential for expansion.)

Uranium markets currently suffer from excess inventories, which are depressing price levels. In terms of uranium consumption, however, the market is growing significantly. Within the next six years, Western world reactor capacity will increase by 65%.

Nuclear reactors are a major electricity source in the industralized economies of the world. According to the Organization for Economic Cooperation and Development, nuclear power will account for fully 20% of the electricity generated in its member countries by 1990. The fundamentals of the uranium export market are highly encouraging, keeping in mind that utilities consume uranium and therefore need a continuing supply.

With potential production of 12,000 tonnes annually

and a return to more acceptable prices as world inventories are reduced, the contribution of Canada's uranium mining companies to the national balance of payments should exceed $1 billion annually by the end of this decade.

Canada's uranium mining industry is really two industries operating in distinctly different economic circumstances, requiring that government export policy span a wide range of conditions. The industry's oldest producing mines are at Elliot Lake in northern Ontario where deep, underground operations produce conventional grades of uranium ore. The Elliot Lake producers made the export breakthrough into the Japanese utility market, establishing the industry as a reliable supplier of uranium for the world's electricity market. Subsequently, long-term contracts with Ontario Hydro made them the largest suppliers to the domestic market. In addition to reserves committed under domestic and foreign contracts, there are significant quantities of uncontracted reserves.

In contrast, Saskatchewan producers in the Athabasca Sandstone Basin operate Canada's newest uranium mines, which feature open pit mining of exceptionally high-grade ore. Thus, the cost of operations tends to favour the Saskatchewan mines — Cluff Lake, Key Lake and Rabbit Lake — which accounted for more than 50% of 1984 Canadian production. Prospects are excellent for the discovery of other orebodies in the Basin and, as export markets develop, additional orebodies such as Cigar Lake can be brought into production.

Currently, in addition to their domestic contracts, the Ontario producers have between them some 30,000 tonnes of uranium committed under long-term export contracts. At the current average price for all long-term Canadian contracts, this represents approximately $2.4 billion (U.S. funds) in export earnings during the next 10 years. The value of these contracts is of national economic importance.

Export contracts and the development of additional mines in Saskatchewan are both assets of national economic importance and worthy of government consideration in the administration of Canada's uranium export policy.

Canada has benefited substantially since 1970 from the policy fostering the further processing of uranium prior to export. The policy protects the economic interests of foreign customers by requiring that processing in Canada be competitive in terms of both price and deliverability. If Canadian processing is competitive, only then is uranium mine production converted into uranium hexafluoride prior to export. This federal policy is consistent with provincial policies regarding other minerals and is a laudable objective for a resource-exporting nation. Uranium conversion generates some $50 million in foreign exchange earnings annually. Given Canada's increasing mine capacity and the competitiveness of Canadian processing facilities, there is significant growth potential.

### Nuclear Services and Technology

The research and development efforts of the Canadian nuclear industry were initiated in support of the CANDU reactor and the non-energy technologies discussed in the section on research and development. The CANDU concept, using heavy water as the reactor moderator and coolant and on-line fuelling, required scientific and engineering advances that have given Canadian nuclear technology a lead in a number of areas. This Canadian technology, however, is adaptable for use in nuclear generation in other countries and in broader applications. Thus, a large and growing export market has developed for Canadian nuclear technology.

Of particular significance, is the servicing of light water reactors in use in the United States, France, Japan and other countries. Technologies currently marketed by Canadian firms include robotics, in-service inspection techniques, chemical decontamination, equipment modification to improve reactor performance, steam generator cleaning techniques, nuclear waste handling technology, and a wide variety of other technologies which can assist American and other utilities in the safe and efficient operation of their reactors.

At the present time, public and private corporations are marketing their individual capabilities, products and services to foreign utilities. These efforts could provide a greater return to the Canadian economy and more jobs for Canadians if marketing were co-ordinated under a joint industry organization.

Another major area of potential export of Canadian nuclear technology is in the handling, storage and ultimate disposal of nuclear wastes. While nuclear programs take a more carefully controlled and well understood approach to wastes than any other industry, all countries with nuclear programs must ultimately deal with nuclear wastes. Although much research and development is proceeding, no country has a fully developed national storage and disposal plan. Canada has made significant advances in the technology for the disposal of nuclear waste in deep geological formations. A deep crystaline rock laboratory is under construction. Thus, the Canadian nuclear industry has a significant opportunity to contribute to the Canadian economy by providing scientific and engineering assistance to other countries considering deep disposal facilities. In this regard, co-operation is underway among Canada, the United States, Mexico, Sweden and others.

As with the export of nuclear service technology, the export of nuclear waste technology would benefit from the co-ordination of efforts of all contributors to the Canadian program in a "Team Canada" approach. In both areas, the necessary capabilities are available in governments, the utilities and the private sector and the technology exists or could be modified or developed with little additional funding.

Development of these opportunities is seen by the industry as following the lead given by the federal government.

### Radioisotopes, Medical and Industrial Equipment

As noted in "Research and Development" Section 4.1, 90% of Canada's production of radioisotopes and associated medical and industrial equipment has been exported to more than 80 countries. In fiscal 1984, such exports produced some $80 million in foreign exchange revenues for AECL. While some product lines are not competitive and are therefore being dropped, substantial growth is being achieved in other areas. Section 4.1 discusses some of the as-yet untapped applications of nuclear technology which have exceptional export potential.

### Electricity Exports

Canada has traditionally exported electricity to the United States with exports increasing more than seven-fold between 1960 and 1983. In 1983, nuclear-generated power made its first major contribution with the export to the north-eastern U.S. market of one-third of the output from the new Point Lepreau 1 reactor generating foreign exchange revenues of $105 million.

Over the next 10 to 20 years an excellent window of opportunity exists for exports of CANDU-generated electricity to the United States. The Canadian Energy Research Institute has estimated that electricity exports could reach $4 billion annually by the end of the 1990's.

As the American economy recovers, the relatively high cost of oil-generated power and the special problems of the American nuclear industry will result in U.S. electricity supply constraints. There is a growing trend for utilities in the U.S. to rely on power generated by third parties wholesaling energy. One option available to U.S. utilities is to increase their imports of electricity from Canada. The construction of CANDU stations in Canada to supply this power is a competitive option for many U.S. utilities. Canadian provincial and U.S. utilities could realize their respective objectives by building a limited number of CANDU reactors in Canada to meet an urgent U.S. requirement until domestic markets require the CANDU capacity. The development of a second reactor at Point Lepreau is intended to seize such an opportunity.

Electricity exports to the U.S. should be encouraged since they represent a significant "value added" to a primary resource, create much-needed domestic employment and provide a positive on-going contribution to the balance of payments. As well, the early construction of some nuclear power generating facilities ensures that power will be available to supply future provincial needs.

One obstacle to electricity exports is an American concern regarding undue dependence on foreign energy supplies. This is an area of increasing concern to the CNA and its members. This potential impediment must be addressed if Canada is to realize a major economic opportunity and if U.S. utilities are to meet the electricity requirements of their markets. One way of addressing the issue is for the Minister of Energy, Mines and Resources to open discussions with her provincial counterparts regarding this matter. The federal government can influence American policy to the benefit of Canada by urging the U.S. to maintain a free market system for electricity imports and exports and to establish a regulatory climate which does not impede electricity trade. This will allow the provinces to facilitate economic and employment growth in Canada and will foster mutually advantageous electricity energy trade relations with Canada's largest trading partner.

### Reactors and Technology

The broad spectrum of technical competence in Canada spread through the utilities, the private sector and government laboratories is necessary not only to design, build and operate CANDU plants but also to produce and market radioisotopes, and to undertake fundamental and applied R & D associated with a total nuclear program. Given Canada's experience in all areas of the nuclear program, in the absence of domestic reactor orders, the nuclear industry continues to seek aggressively overseas sales for reactors and related technology. Although potential customers wishing to have an independent nuclear program must eventually develop expertise in most areas of nuclear science and industry, the degree, schedule and priority of participation in each of these areas will depend, to a large extent, on each individual country's specific needs and its capabilities — technical, personnel, facilities and financial. Canada can, and is, willing to enter into agreements for technology transfer to other nations, provided the requirements of Canada's safeguards regime are met. The market, however is characterized by fierce competition among the champions of various reactor types. CANDU has the ability to compete through unified Canadian support.

A major reactor export would also act to stabilize the Canadian nuclear industry. Many nuclear suppliers are operating below capacity, without new orders on the books. Export of a reactor with high Canadian content in engineering and manufacturing would provide a bridge to the next domestic order enabling the industry to maintain employment, capability and capacity.

While nuclear reactors have historically been considered an essential energy component in industrialized nations and more recently in developing countries, the 1990's will likely see the emergence of a new type of export market. A major trend in the balance of this century is the rapid urbanization of non-industrialized countries. These countries will increasingly require electricity for demographic and social reasons. The growth of Mexico City is an example of this emerging trend. United Nations studies indicate that while in 1984, only 34 cities in the world had populations greater than 5 million, by 2025 there will be 93 with 80 of these in developing countries. In such circumstances, energy will become a social necessity and "energy aid" will be comparable to food aid.

Recent studies by the World Energy Conference have stressed the importance of the developing countries in the global energy picture. By the year 2020, the share of total nuclear and hydro power attributable to these countries

will reach 17% and 60% respectively. In terms of electricity in general, the developing countries will account for 75% of total world generation by the year 2020.

Under these circumstances, the export-financing assistance which is dictated by today's competitive market may become a form of foreign aid in the future.

### Priorities for Nuclear Exports:

Nuclear exports of all types could be facilitated by federal initiatives in several areas raised in the "New Direction for Canada" document:

#### 1. Bilateral Agreements

Under current policy and regulation, a bilateral nuclear co-operation agreement between Canada and a prospective purchasing nation must be in place before serious marketing efforts and negotiations can begin. These agreements are to assure that the country will abide by Canada's safeguard requirements.

**The CNA recommends the more expeditious negotiation of nuclear co-operation agreements with potential client jurisdictions to facilitate the marketing and sale of nuclear products.**

#### 2. Export Financing

At the present time, Canada's nuclear export opportunities are constrained by export financing policies. Of particular concern are the limited allocation of funding for large, capital-intensive projects and the competition among exporting countries in the financing of major power projects. Given the potential of nuclear energy to contribute to economic development, the use of aid funds to support financing to developing countries is an issue in competitive international marketing which must be examined.

**The CNA recommends that the industry participate in the federal government's review of approaches to export financing to ensure that the nuclear industry can compete more effectively in the international marketplace.**

**Further, the CNA recommends that the federal government and specifically CIDA, in consideration of Canada's long-term foreign aid role, continue to include electricity as a beneficial facility which Canada can offer to rapidly urbanizing Third World countries.**

#### 3. Electricity Exports

**The CNA recommends that the federal government support in principle the economic opportunity presented by the proposed Point Lepreau 2 reactor, pending the completion of commercial contracts and agreements. To allow these agreements to be reached, it may be essential that the federal government provide the financial and completion guarantees to expedite the project.**

**Further, the CNA recommends that the federal Minister of Energy, Mines and Resources enter into discussions with her provincial counterparts regarding the need for federal initiatives to facilitate increasing the export of electricity to the United States.**

#### 4. Uranium Export Policy Administration

**The CNA recommends that the federal government maintain its uranium export policies, as reaffirmed in September 1983, and further recommends that, to the extent that any change, administrative or otherwise, may subsequently appear desirable, that it be made in consultation with the Canadian uranium industry.**

#### 5. Trade Commissions

Canada's trade commissioners might play a more active role in seeking out opportunities for nuclear exports, providing contacts and referrals, supplying field information to the industry and in promoting Canada's nuclear technology.

**The CNA recommends that the federal government, in co-operation with the nuclear industry, sponsor an information program for trade representatives on the full range of Canada's nuclear export potential. The objective of the program would be to ensure that trade representatives are even more conversant with the technological capabilities and expertise of the Canadian nuclear industry particularly relating to its many non-energy products. Such a program should include biennial meetings of trade representatives to review developments in the international nuclear market.**

## 4.3 PRIVATE SECTOR INVESTMENT

The majority of the CNA's membership is in the private sector ranging from major mining companies and equipment manufacturers to specialized suppliers of components and technical services. The Crown corporations and provincial utilities in our industry directly and indirectly provide a large measure of support to private business in Canada through purchasing, technology-sharing and other activities. The nuclear industry thus has a significant impact on, and hence an interest in, the well-being of the private sector.

Most of the major private companies in the Canadian nuclear industry are partially or wholly foreign-owned with strong American and British presences. Foreign ownership crosses all sectors of the industry. These companies act as Canadian firms by including high Canadian content in their products, employing Canadians and retaining or reinvesting earnings in this country. The Canadian economy benefits through the creation of employment, Canadian spending by foreign companies and access to technology developed elsewhere.

The CNA endorses the federal government's recognition that the private sector drives the Canadian economy and is the primary source of economic renewal. Private sector members of the CNA stand to benefit the most from many of the recommendations in this brief. These companies strongly urge the federal government to support these recommendations because they have considerable potential to increase employment and export revenues.

The CNA advocates appropriate changes in the roles of the public and private sectors within the nuclear industry in response to evolving economic and market conditions. However, there is an on-going need for Crown involvement. Some parts of the nuclear industry are firmly in the public domain, either for policy reasons or for the efficient provision of services to the industry. Foremost is the area of research and development. Publicly supported, centralized research allows for co-ordination, rationalization and sharing of results. This permits the undertaking of major projects which benefit the whole industry but which would be beyond the means of any one participant.

**Priorities for Private Sector Investment:**

**1. Investment Climate**

A climate of stability and confidence is essential to spur private investment in productivity and efficiency improvements. In the case of the nuclear industry, this requires the assurance of a stable regulatory environment and the long-term commitment of the federal government to nuclear energy and technology.

**The CNA recommends, therefore, that the federal government, recognizing the importance of the nuclear industry to Canada, express its unqualified support of, and confidence in, the nuclear industry.**

**2. Foreign Ownership**

**The CNA endorses the federal government's initiatives to encourage foreign investment. Specifically, the CNA recommends that Canada's policy regarding foreign ownership of Canadian uranium interests be dropped in favour of the ownership policies enunciated in the Investment Canada Bill C-15. The industry would then be regulated, in terms of its ownership, on the same basis as any Canadian private sector group.**

## 4.4 LABOUR MARKETS AND HUMAN RESOURCES

The nuclear industry provides direct employment for over 31,000 Canadians and indirect employment for approximately 55,000. These jobs are located across Canada and involve all skill levels from semi-skilled labour to advanced science and engineering. The majority of jobs are long term, providing secure employment.

The CNA and industry members participate in human resources training programs in co-operation with the federal and provincial governments. An important initiative in this area was the signing in 1983 of a Memo of Understanding on Human Resources Planning between the CNA and the Canadian Employment and Immigration Commission. Under this agreement, information is shared to analyze human resource requirements and to identify potential areas of employment growth and decline. Another example is the participation in the Internship Project under the CEIC Career Access Program.

The nuclear industry and particularly the electrical utilities, provide extensive in-house training for technical and operations staff. These training programs have increased Canada's supply of highly skilled trade, technical and engineering personnel.

In addition to supporting training for workers in the industry, the Canadian nuclear industry has made significant contributions to educational programs at all levels from elementary schools to advanced science and engineering institutes. Information programs for use by elementary and high school teachers have been prepared by Ontario Hydro and AECL. Assistance has been given to thousands of students in the preparation of essays and projects on nuclear-related topics. At the more advanced level, the industry has maintained strong relationships with the nuclear engineering and physics programs at universities including McGill, Toronto, McMaster, Trent, Royal Military College, Ecole Polytechnique, New Brunswick, Dalhousie, Saskatchewan, Manitoba and British Columbia. At the latter, the TRIUMF research facility has made important contributions to Canada's nuclear program.

**Priorities for Human Resources:**

**1. Industry Consultation**

**The CNA recommends that the nuclear industry be actively involved in the federal review of training and retraining programs.**

**2. Assistance to Government**

**The CNA recommends that the federal government consider the industry as a potential planning resource in the development of technical training programs.**

## 4.5 ADAPTING TO ECONOMIC AND TECHNOLOGICAL CHANGE

Electrical generation, including nuclear generated electricity, forms an integral part of Canada's industrial base. Over two-thirds of electricity generated in Canada is consumed by the industrial and commercial sectors and these sectors are expected to consume over 75% of total production by the year 2000. The major reason for this development is the improved cost competitive position of electricity vis-a-vis other fuels. Electricity-intensive industries are consistently the leaders in manufacturing output, employment, exports and investment. The top ten electricity consuming industries account for roughly 50% of total employment in the Canadian manufacturing sector. Wages and productivity tend to be highest in those industries which use greatest amounts of electricity.

The renewal of existing industry and the development of new high-technology industries are both vital to Canada's economic future. Nuclear-generated electricity and technology developed by the nuclear industry can play an important role in both areas.

### Existing Industries

In recent years, the recession, low productivity and high energy costs have eroded the competitive position of Canada's mature industries such as pulp and paper, mining and smelting, and iron and steel. Operations are well below capacity and planned investment in production facilities remains historically low. As the economy recovers, investment in modernization is required to achieve productivity gains and international competitiveness — the mature industries are entering the high-tech era. Many of the advanced technologies required to enter this era are electricity-based. Excellent opportunities exist for induction heating and melting and plasma arc technology in the steel industry, thermo-mechanical pulping in the pulp and paper industry, dual fuel power plant boilers and adjustable speed electric drive systems. A number of possibilities in this area are examined in a recent Ontario Joint Industry Task Force report, Job Creation — The Electrotechnology Way.

The advanced engineering and technology developed in the nuclear industry can also contribute to the modernization of traditional industries. Examples include high quality, precision components in manufacturing and process equipment, sophisticated process monitoring and controls and increased use of robotics and remote handling technology.

### New Industries

Many of the new high-technology industries with greatest potential rely heavily on electricity. These include four broad categories:

- microelectronics, including computers and communications;
- optoelectronics including lasers, light-emitting and light-sensitive devices and optical fibers;
- biotechnology including genetic engineering, processing and food technology; and
- materials technology.

In these new industries as well as in the mature ones, engineering capabilities developed in the nuclear program have many potential applications.

### Priorities for Economic and Technological Change:

#### 1. Electricity-based Technologies

**The CNA recommends that, in order to promote the adoption of the most efficient, productive technology supported by a secure, reliable energy source, the federal government work with the provinces and adopt policies promoting increased use of electricity-based technology in both existing and new industries.**

#### 2. Technology Transfer

**The CNA recommends that, in order to facilitiate the adoption of electricity-based technology, the federal government and the provinces sponsor a task force modelled on the Ontario Joint Industry Task Force and establish a technology centre for the application of electrical technologies in industry.**

## 4.6 GROWTH AND COMPETITIVENESS: THE REGIONAL DIMENSION

Nuclear related facilities or activities are located across Canada contributing in varying degrees to the economies of six provinces and 33 communities. As a stimulus to regional development, contributions in Saskatchewan, Northern Ontario, New Brunswick and Nova Scotia are especially important. There are several key opportunities for the nuclear industry to bolster regional economies of Canada in partnership with the federal and provincial governments.

The major opportunity for regional development is the construction of a second reactor at Point Lepreau in New Brunswick. Unemployment in the area is high, especially in the construction sector. Skills are available having been developed on the Point Lepreau 1 project and the project has the support of labour unions. From design through construction, approximately 58,000 person-years of employment would be generated. This could make a significant contribution to reducing unemployment in the region. Spending on equipment, materials and services, as well as the respending of wages and salaries, would generate economic stimulus in New Brunswick, the other Atlantic provinces, and also in Ontario and Quebec.

The opportunity for Point Lepreau 2 has merit in the marketplace. However, continuing the operation of two heavy water plants in Nova Scotia has no market potential during the next decade. While the CNA recognizes that one of government's responsibilities is to provide assistance to depressed regions of Canada, nuclear industry critics maintain that the heavy water plant subsidies are yet another example of taxpayer support for the nuclear industry. In fact, however, these subsidies are taxpayer support for regional economies and have nothing to do with the nuclear industry. The taxpayer's investment in the industry has paid, and continues to pay, handsome dividends, as pointed out in the Research and Development section of this brief.

The CNA supports AECL's proposal to close one and mothball the other heavy water plant in Cape Breton. The industry urges government to identify other, more cost-effective means of supporting the economy and social structure of that region.

### Priorities for Regional Development:

#### 1. Point Lepreau 2

**The CNA recommends that the federal government, once commercial agreements are in place, play its role in supporting the construction of a second nuclear reactor in New Brunswick.**

#### 2. Heavy Water

**The CNA recommends that the federal government approve AECL's proposal to rationalize heavy water invest-**

ments in keeping with market prospects and implement other, more cost-effective programs to fulfill its social responsibilities to Cape Breton.

## 4.7 ECONOMIC REGULATION AND INTERVENTION

The nuclear industry is one of the most heavily regulated of Canadian industries. In the international sphere, Canadian non-proliferation and safeguards policies are among the most stringent. In the past, dramatic changes were made in these policies which earned Canada a reputation of being an unreliable nuclear supplier. During recent years, when our safeguards policies have not been subject to change, Canadian nuclear exporters have re-established a level of confidence with traditional customers. In some potential markets, Canadian exporters are at a disadvantage as they try to compete with foreign suppliers who apply safeguards in a more relaxed manner. These differences in the way in which the various supplier nations operate in the international market is a source of ongoing frustration for Canadian nuclear exporters. However, we do not advocate that Canada reduce its safeguard requirements. Rather, Canada should continue its efforts towards establishing consistent, international nuclear export practices.

In Canada, the nuclear sector is a federally regulated industry with some operations also falling under provincial jurisdictions. Thus, the Atomic Energy Control Board and the Department of Fisheries and Oceans regulate the industry from the federal perspective while the Ministries of Labour and the Environment have overlapping federal and provincial jurisdiction. The fundamental aim of regulation should be to ensure the health and safety of nuclear workers, the general public and to protect our environment for present and future generations. During the 40 year development and maturation of Canada's nuclear industry, production methods and practices have stabilized and the issues surrounding the health and safety of workers, the general public and environmental protection have become well understood. Since we do not live in a risk-free world, it should be possible for society to agree on an acceptable level of risk from industrial activity including that of the nuclear industry. From this base, regulatory standards can be established below which industry must operate. Following well-established Canadian procedure, it should then be the responsibility or industry to ensure that their operations meet these standards. Thus, industry supports scientifically based rational regulation which meets the requirement for worker, public and environmental safety and which has demonstrated cost-effectiveness.

From these assumptions, one would expect that an industry which has achieved a level of maturity in its processes and practices would be subjected to a maturing and stabilized set of regulatory practices and procedures. In the case of the nuclear industry, this unfortunately is not the case. The agency staffs, budgets, and regulatory activities continue to grow at a rapid rate. Without clearly defined and articulated regulatory objectives, we see few checks and balances in the increasing growth of regulatory activity on the part of governments.

### Priorities for Regulations

#### 1. International Nuclear Trade

**The CNA recommends the federal government continue to vigorously press other nuclear supplier nations to establish a common set of rules for international trade in nuclear materials and technology.**

#### 2. Regulatory Rationalization

**The CNA recommends that the federal government, jointly with the provincial governments, review the basis of safety standards, set long-term goals, and establish a regulatory agenda in order to bring greater stability and predictability to the regulatory process.**

## 4.8 ENERGY POLICY AND CO-ORDINATION WITH THE PROVINCES

While energy has been a major factor in federal economic planning in the past decade, electricity has not. There appear to be several reasons why federal governments have tended to overlook its importance, despite the fact that electricity accounts for 20% of total energy produced in Canada.

The generation of electricity is a provincial responsibility. This reality is rooted in both constitutional considerations and historical practice.

Unlike oil and natural gas, most electricity is generated and consumed within the same province. The federal government thus, has had little opportunity or reason to regulate or tax electricity since so little of it has flowed beyond provincial borders. Furthermore, federal policy has tended to leave market development to the utilities. The one exception in recent years was federal assistance in converting residential heating systems. Even here, however, the program was developed in terms of "off oil" rather than "onto electricity."

Federal governments have tried to foster production and new markets for the petroleum industry, sometimes at the expense of electric utilities. This federal attention is understandable given the public and government interest in petroleum industry ownership, oil imports, oil pricing and taxation. It may, however, induce an unfair bias.

The CNA strongly believes the time has come to begin a new era of energy planning, one which fully recognizes: (a) the federal-provincial partnership; (b) provincial electricity rights; (c) electricity's potential for economic growth and industrial renewal; and (d) nuclear energy as an important electricity option available to the provinces. Accordingly, the CNA would like to address each of these areas.

**(a) Federal-provincial partnership** - The Canadian nuclear industry has developed through the partnership of the federal and provincial governments. While the federal government regulates and has funded the development of the technology, nuclear power stations are owned and operated by the provinces. This partnership offers opportunities in promoting the development of the nuclear industry through co-operative agreements. Agreements could include the advancing of the construction of nuclear facilities (pre-building), the promotion of electricity-based modernization of Canadian industry and increased domestic and international marketing efforts. Such agreements, however, must respect the rights and responsibilities of the federal and provincial governments.

**(b) Provincial rights** - The generation of electricity and the implementation of power related capital projects are among the "engines for economic growth" still in the hands of the provinces. By exercising their rights over electricity generation, the provinces can directly shape their economic future and, in doing so, produce benefits for all Canadians. For example, while James Bay and Darlington were developed under their respective provincial flags, both contributed significantly to the Canadian economy and continue to do so.

The industry is entering a new era, however, where the amount of electricity being produced within some provinces is increasingly surplus to their requirements. Export markets in other provinces and the U.S. are new opportunities for economic growth. Most provinces want to seize these opportunities for their own benefit and, thus, for the benefit of Canada.

Recently, an Economic Council of Canada study suggested that the federal government should look to electricity trade as a potential source of federal tax revenues. The CNA strongly opposes such an infringement on provincial economic rights.

The market, whether it be in Canada or elsewhere, will not pay more for electricity imports than is required. Other options are available. Therefore, any federal taxation of interprovincial electricity trade or of exports will be at the exclusive expense of the producer — the utility, the province which owns it and ultimately its customers, which currently benefit from lower rates because of profits earned on exports. Federal taxation would likely reduce the volume of exports.

Federal taxation of electricity trade would also reduce the amount of internally-generated capital available for new investment and would make external capital for new export projects more expensive. Thus, it would materially affect all industries involved in utility capital projects, including the majority of the CNA's member companies.

**(c) Electricity's potential for growth and renewal** - Capital projects in the industry have a substantial impact on economic growth and job creation, particularly today when most corporate and government capital spending programs are depressed.

The nuclear industry has been identified a powerful engine for economic growth. It is estimated that construction of a single 600 MW reactor (with its inventory of heavy water) would generate $1.6 billion ($1985) in economic activity, 8,000 person-years of direct employment at peak construction and 58,000 person-years of employment over the entire construction period. Canadian content would amount to 80% for major equipment, 95% for bulk materials and 100% for labour and engineering.

Once in operation, reactors produce a further economic stimulus. Consumer spending on electricity has a greater effect on jobs, GNP and income than comparable expenditures on fuel oil or natural gas. The economic activity stimulated by construction of nuclear facilities and the sale of electricity indirectly generates very substantial tax revenues for the federal government.

As discussed in the section on exports, nuclear-generated electricity exports to the northeastern United States from the proposed second 600 MW reactor at Point Lepreau offer a significant economic opportunity. Over the next 20 years, other similar opportunities are expected to arise.

Section 4.5 of this brief discussed the increased role which federal and provincial governments can play in the application of electrical technologies in order to renew the nation's industrial base.

**(d) The provinces' nuclear option** - Nuclear power is almost totally indigenous to Canada. This brings the advantages of independence from instability in world petroleum markets, events in petroleum exporting countries and a long-term, reliable energy supply which is technologically proven and economically viable. Canada has ample uranium resources to meet domestic needs and potential exports for the foreseeable future. As well, in the longer term, advanced fuel cycles give the potential of a virtually renewable resource. A further benefit is that nuclear power has a positive effect on Canada's balance of payments by reducing oil and coal imports.

The CNA is concerned about whether or not Canada will, in fact, have a competitive reactor design and the manufacturing capability when world markets start to reappear in the 1990's and beyond. Our industry is also concerned as to whether Canada will have this electricity option when our own provinces have to make new capacity decisions in the 1990's and beyond.

Today, nuclear reactors account for about 35% of Ontario's electricity production and this will increase to about 60% as the Darlington plant comes on line, displacing coal-fired stations and eliminating the sulphur dioxide emissions which accompany them. In New Brunswick, reactors now provide over 30% of its power supply.

Nuclear reactors are used in these two provinces because their benefits are greater than those available from other generating systems. More specifically, Ontario and New Brunswick have few options available to them other than importing coal, oil and even electricity because of their limited indigenous resources. While nuclear power is

displacing coal-fired generation in Ontario and thus reducing domestic sources of acid rain, it is displacing high-cost imported oil in New Brunswick. In both cases, CANDU reactors are providing secure, provincially-controlled, economic supplies of electricity.

The CNA believes that in the next 15 years, when oil security and prices re-emerge as international issues in a stronger world economy and when the cost of coal-fired electricity and acid rain restrictions escalate, some eastern provinces will need to look for other electricity options. Canadian-designed and built CANDU reactors should be available to those provinces as an option, to be exercised at their discretion.

Similarly, the western provinces in the next 10 years will be looking at their options. It would be tragic, given the enormously successful operating history of the CANDU reactor system and the economic benefits flowing from it, if Canada's seven non-reactor provinces had to consider importing foreign reactors because the CANDU option was not maintained in the 1980's.

The CNA recognizes that this is an important question for the federal government as owner of AECL. However, the industry is convinced that new opportunities will emerge, both at home and increasingly abroad, during the next 15 years. It is imperative that the federal government give policy support to near-term opportunities for reactor export sales, in order to maintain Canada's ability to produce safe, dependable, economic, non-polluting and secure CANDU reactors for future domestic markets. The maintenance of this capability is an insurance policy for the future. The premiums are small compared to the potential payouts.

**Priorities for Energy Policy and Co-ordination with the Provinces:**

**1. Economic Growth**

**The CNA strongly recommends that the federal government policies recognize the vital and growing contribution the electrical, and particularly the nuclear industry, can make to increasing economic growth and job creation through capital projects and electricity exports.**

**2. Federal Taxation**

**The CNA vigorously opposes the Economic Council of Canada recommendation that the federal government tax electricity exports.**

**3. Point Lepreau 2**

**The CNA considers federal policy support of a second Point Lepreau reactor in New Brunswick imperative and recommends that, once commercial contracts are in place, the government play its role in this vital regional project which offers national benefits.**

**4. Industrial Renewal**

**The CNA recommends that the federal government play a greater role in electricity market development with particular emphasis on electrical applications designed to renew and strengthen Canada's industrial base.**

**5. The CANDU Option**

**The CNA recommends that the federal government maintain the proven capability of Canada's reactor team so it will be available as an option to all provinces, particularly those without current nuclear experience and capability.**

## 5.0 SUMMARY OF RECOMMENDATIONS BY POLICY AREA

**Priorities for Nuclear Research and Development:**

The CNA recommends that public support of nuclear research and development be maintained for innovative technologies in areas which support and reinforce public policy.

**1. Non-Energy Nuclear Technology**

Specifically, the CNA recommends that public support be increased in research and particularly accelerated development of applications of nuclear technology in food preservation, agriculture, insect control and environmental protection to contribute both to the Canadian economy and to the food and wood fuel needs of the Third World.

**2. Energy-Related Nuclear Technology**

Further, the CNA recommends that public support be maintained to continue research and development with respect to:

- the transport, storage and disposal of radioactive wastes;
- further improving the operating efficiency of nuclear reactors;
- commercially attractive, moderately-sized power reactors;
- SLOWPOKE-type reactors for localized energy supply; and
- advanced fuel cycles and fusion to enhance Canada's technological capability to compete in the international market.

**Priorities for Nuclear Exports:**

**1. Bilateral Agreements**

The CNA recommends the more expeditious negotiation of nuclear co-operation agreements with potential client jurisdictions to facilitate the marketing and sale of nuclear products.

**2. Export Financing**

**The CNA recommends that the industry participate in the federal government's review of approaches to export financing to ensure that the nuclear industry can compete more effectively in the international marketplace.**

Further, the CNA recommends that the federal government and specifically CIDA in consideration of Canada's long-term foreign aid role, continue to include electricity as a beneficial facility which Canada can offer to rapidly urbanizing Third World countries.

### 3. Electricity Exports

The CNA recommends that the federal government support in principle the economic opportunity presented by the proposed Point Lepreau 2 reactor, pending the completion of commercial contracts and agreements. To allow these agreements to be reached, it may be essential that the federal government provide the financial and completion guarantees to expedite the project.

Further, the CNA recommends that the federal Minister of Energy, Mines and Resources enter into discussions with her provincial counterparts regarding the need for federal initiatives to facilitate increasing the export of electricity to the United States.

### 4. Uranium Export Policy Administration

The CNA recommends that the federal government maintain its uranium export policies, as reaffirmed in September 1983, and further recommends that, to the extent that any change, administrative or otherwise, may subsequently appear desirable, that it be made in consultation with the Canadian uranium industry.

### 5. Trade Commissions

The CNA recommends that the federal government, in co-operation with the nuclear industry, sponsor an information program for trade representatives on the full range of Canada's nuclear export potential. The objective of the program would be to ensure that trade representatives are even more conversant with the technological capabilities and expertise of the Canadian nuclear industry particularly relating to its many non-energy products. Such a program should include biennial meetings of trade representatives to review developments in the international nuclear market.

## Priorities for Private Sector Investment:

### 1. Investment Climate

The CNA recommends, that the federal government, recognizing the importance of the nuclear industry to Canada, express its unqualified support of, and confidence in, the nuclear industry.

### 2. Foreign Ownership

The CNA endorses the federal government's initiatives to encourage foreign investment. Specifically, the CNA recommends that Canada's policy regarding foreign ownership of Canadian uranium interests be dropped in favour of the ownership policies enunciated in the Investment Canada Bill C-15. The industry would then be regulated, in terms of its ownership, on the same basis as any Canadian private sector group.

## Priorities for Human Resources:

### 1. Industry Consultation

The CNA recommends that the nuclear industry be actively involved in the federal review of training and retraining programs.

### 2. Assistance to Government

The CNA recommends that the federal government consider the industry as a potential planning resource in the development of technical training programs.

## Priorities for Economic and Technological Change:

### 1. Electricity-based Technologies

The CNA recommends that, in order to promote the adoption of the most efficient, productive technology supported by a secure, reliable energy source, the federal government work with the provinces and adopt policies promoting increased use of electricity-based technology in both existing and new industries.

### 2. Technology Transfer

The CNA further recommends that, in order to facilitate the adoption of electricity-based technology, the federal government and the provinces sponsor a task force modelled on the Ontario Joint Industry Task Force and establish a technology centre for the application of electrical technologies in industry.

## Priorities for Regional Development:

### 1. Point Lepreau 2

The CNA recommends that the federal government, once commercial agreements are in place, play its role in supporting the construction of a second nuclear reactor in New Brunswick.

### 2. Heavy Water

The CNA recommends that the federal government approve AECL's proposal to rationalize heavy water investments in keeping with market prospects and implement other, more cost-effective programs to fulfill its social responsibilities to Cape Breton.

## Priorities for Regulation:

### 1. International Nuclear Trade

The CNA recommends the federal government continue to vigorously press other nuclear supplier nations to establish a common set of rules for international trade in nuclear materials and technology.

### 2. Regulatory Rationalization

The CNA recommends that the federal government, jointly with the provincial governments, review the basis of safety standards, set long-term goals, and establish a

regulatory agenda in order to bring greater stability and predictability to the regulatory process.

### Priorities for Energy Policy and Co-ordination with the Provinces:

#### 1. Economic Growth

The CNA strongly recommends that the federal government policies recognize the vital and growing contribution the electrical, and particularly the nuclear industry, can make to increasing economic growth and job creation through capital projects and electricity exports.

#### 2. Federal Taxation

The CNA vigorously opposes the Economic Council of Canada recommendation that the federal government tax electricity exports.

#### 3. Point Lepreau 2

The CNA considers federal policy support of a second Lepreau reactor in New Brunswick imperative and recommends that, once commercial contracts are in place, the government play its role in this vital regional project which offers national benefits.

#### 4. Industrial Renewal

The CNA recommends that the federal government play a greater role in electricity market development with particular emphasis on electrical applications designed to renew and strengthen Canada's industrial base.

#### 5. The CANDU Option

The CNA recommends that the federal government maintain the proven capability of Canada's reactor team so it will be available as an option to all provinces, particularly those without current nuclear experience and capability.

## APPENDIX A
## CNA COMPANY MEMBERSHIP LISTING

Acres International Limited, Toronto, Ontario
Alberta Power Limited, Edmonton, Alberta
ALCAN Aluminum Ltd., Montreal, Quebec
American Nuclear Society, LaGrange Park, Ill., USA
AMOK Limited, Saskatoon, Sask.
Andec Mfg. Ltd., Rexdale, Ontario
ASEA Limited, Montreal, Quebec
Atomic Energy of Canada Ltd., Ottawa, Ontario
Australian Atomic Energy of Commission, Australia

B.C. Hydro & Power Authority, Vancouver, B.C.
Babcock & Wilcox Canada Ltd., Cambridge, Ontario
Bata Engineering Co., Batawa, Ontario
Bechtel Canada Ltd., Toronto, Ontario
Bingham-Willamette Ltd., Burnaby, B.C.
Bristol Aerospace Ltd., Winnipeg, Manitoba
British Library, Yorkshire, England
British Nuclear Fuels PLC., Lancashire, England
BBC - Brown Boveri Canada Ltd., Pointe Claire, Quebec

CAE Electronics Ltd., Montreal, Quebec
C-E Canada Ltd., Ottawa, Ontario
Canada Alloy Castings Ltd., Kitchener, Ontario
Canada Forgings, Div. Toromont Ind. Ltd., Welland, Ontario
Canadian Electrical Association, Montreal, Quebec
Canadian Energy Res. Inst., Calgary, Alberta
Canadian General Electric Co. Ltd., Peterborough, Ontario
Canadian Institute of Radiation Safety, Elliot Lake, Ontario
Canadian Worcester Controls Ltd., Scarborough, Ontario
Canatom Limited, Montreal, Quebec
Carleton University, Ottawa, Ontario
CECO Consultants Ltd., Toronto, Ontario
Chalk River Tech. & Technol/CLN Local 1568, Deep River, Ontario
Chase Nuclear (Canada) Ltd., Arnprior, Ontario
Chromalox Canada Inc., Rexdale, Ontario
Cogema Canada Ltd., (formerly SERU), Montreal, Quebec
College Tool & Die, Mississauga, Ontario
Le commissariat a l'energie atomique, France
Crane Packing Co., Hamilton, Ontario

Denison Mines Ltd., Toronto, Ontario
Dept. of Energy, Mines & Resources, Ottawa, Ontario
Dept. of the Environment, Ottawa, Ontario
Dept. of External Affairs, Ottawa, Ontario
- Canadian Embassy, Algeria
- Canadian Embassy, Italy
- Canadian Embassy, Athens, Greece
- Canadian Embassy, Vienna, Austria
- Canadian Consulate General Library, New York, USA
- Mission of Canada - European Communities, Belgium
- Ambassade de Canada (Bucarest) Ottawa, Ontario
- Canadian Consulate General, Australia
- Canadian High Commission, Library, England
- Embaixade do Canada, Brazil

DSMA ATCON LTD., Toronto, Ontario
Dominion Bridge-Sulzer Inc., Montreal, Quebec
Donlee Manufacturing Industries Ltd., Weston, Ontario
J.M. Douglas Consultants, Cambridge, Ontario

Ecole Polytechnique, Montreal, Quebec
Ecolaire, Canada Ltd., Kitchener, Ontario
Eldorado Resources Ltd., Ottawa, Ontario
Electricite de France, Paris, France
Elsam, Kraftvaerksgruppen, Frederica, Denmark
Embassy of Brazil, Ottawa, Ontario
Energy Resources Conservation Board, Calgary, Alberta
Esso Resources Canada Limited, Calgary, Alberta
Euratom Library, Brussels, Belgium
Exeflow Ltd., Ville St. Pierre, Quebec

Fachinformationszentrum, West Germany
Farris Industries Canada, Brantford, Ontario
Foster Wheeler Ltd., St. Catharines, Ontario
Foundation Co. of Canada Ltd., Toronto, Ontario

George Brown College, Toronto, Ontario
Gravatom Industries Ltd., Hampshire, England

Harriet Irving Library (U. of N.B.)
Hitachi (Canadian) Ltd., Toronto, Ontario
Howden Group Canada, Scarborough, Ontario
Hydro-Quebec Electric Commission, Montreal, Quebec

Institute of Nuclear Energy Research, Republic of China
Italimpianti S.P.A., Italy

Jarda FCS Inc., Montreal, Quebec
Johnson & Higgins Willis, Faber Ltd., Toronto, Ontario

Korea Electric Co., Seoul
Klohn Leonoff Consultants Ltd., Richmond, B.C.

R. Laborie & Associates, Rexdale, Ontario
Laboerco Ltd., Oakville, Ontario
F. Clyde Lendrum Ltd., King City, Ontario
London Nuclear Decontamination Ltd., Niagara Falls, Ontario
Lummus Canada Inc., Willowdale, Ontario

MacLaren Engineers Inc., Toronto, Ontario
MacLaren Plansearch Inc., Toronto, Ontario
McMaster University, Hamilton, Ontario
Marine Industries Ltd., Sorel, Quebec
Martineau Walker, Montreal, Quebec
Marubeni Canada Ltd., Toronto, Ontario
Meikle Engineering Services, Mississauga, Ontario
Metropolitan Toronto Library Board, Toronto, Ontario
Mitsui & Co (Canada) Ltd., Toronto, Ontario
Monserco Ltd., Mississauga, Ontario
Montreal Engineering Co. Ltd., Montreal, Quebec

N.E.I. Parsons (Canada) Ltd., Toronto, Ontario
New Brunswick Electric Power Comm., Fredericton, N.B.
Newman Hattersley Ltd., Mississauga, Ontario
New Zealand Electricity, New Zealand
Nicholls-Radtke & Associates Ltd., Cambridge, Ontario
Nova Scotia Power Corp., Halifax, N.S.
Nova Scotia Research Foundation, Dartmouth, N.S.
Nuclear Assurance Corp., Atlanta, Ga., USA
Nuclear Construction Managers, Montreal, Quebec
Nuclear Insurance Association, Toronto, Ontario
Nuclear Metals Inc., Concord, Mass.
Nuclear Shielding Supplies, Longueuil, Quebec
Nukem GmbH, Hanau, West Germany
NUEXCO - Menlo Park, Ca., USA

Ontario Ministry of Energy, (& Labour) Toronto, Ontario
Ontario Hydro, Toronto, Ontario
Ontario Hydro Employees Union NUPSE-CLC, Toronto, Ontario
Ontario Robotics Centre, Peterborough, Ontario

Pakistan Atomic Energy Commission, Pakistan
Phillips Cables Ltd., Brockville, Ontario
Pullman Power Products of Canada Ltd., St. John, N.B.

Qualprotech, Beaconfield, Quebec
Quebec Ministry of Energy, St. Foy, Quebec

Ralfor Steel Ltd., St. Laurent, Quebec
Reed Stenhouse, Toronto, Ontario
Reuter-Stokes Ltd., Cambridge, Ontario
Rio Algom Mines Ltd., Toronto, Ontario
David S. Robertson & Associates, Ltd., Toronto, Ontario
Royal Military College, Kingston, Ontario

Safety Supply Canada, Toronto, Ontario
Saskatchewan Mining & Development Corp., Saskatoon, Sask.
Seneca College, Toronto, Ontario
SENES Consultants, Willowdale, Ontario
Shawinigan Lavalin Inc., Montreal, Quebec
Sihi Pumps Ltd., Guelph, Ontario
Spar Aerospace, Toronto, Ontario
Spectrum Engineering Corp., Peterborough, Ontario
Stearns Catalytic Ent. Ltd., Sarnia, Ontario
The S.M. Stoller Corp., New York, USA
Sulzer (Canada) Ltd., Pointe Claire, Quebec

Taylor Forge, Burlington, Ontario
Thyssen Marathon Fine Steels (Canada) Ltd., Mississauga, Ontario
TransAlta Utilities, Calgary, Alberta
TRIUMF (Tri University Meson Facility), Vancouver, B.C.
Trutom Ltd., Montreal, Quebec

Universal Pipe Line Ltd., Montreal, Quebec
Universite Laval, Quebec City, Quebec
University of Regina, Regina, Saskatchewan
University of Toronto, Toronto, Ontario
Uranerz Exploration & Mining Ltd., Saskatoon, Saskatchewan
Urangesellschaft Canada Ltd., Toronto, Ontario
Uranium Information Centre Ltd., Melbourne, Australia

Velan Engineering Ltd., Montreal, Quebec
Versatile Vickers Inc., Montreal, Quebec

W.L. Wardrop & Associates Ltd., Winnipeg, Manitoba
Westinghouse Canada Ltd., Hamilton, Ontario

**Association nucléaire canadienne**

# *"L'industrie nucléaire canadienne: une richesse nationale" Mémoire présenté au gouvernement fédéral*

**Préparé en réponse au document**
**"Une nouvelle direction pour le Canada"**
**du ministre fédéral des Finances**

**Mars 1985**

Available in English.

## L'industrie nucléaire canadienne: une richesse nationale

L'industrie nucléaire canadienne a connu une expansion remarquable au cours des quarante dernières années. Fort de son expérience minière, le Canada est devenu le premier producteur mondial d'uranium; les gisements les plus riches en existence attendent toujours d'être exploités. En fait de technologie de pointe, notre réacteur CANDU est inégalé. Année après année, les réacteurs CANDU canadiens se classent parmi les dix meilleurs au monde, au niveau du rendement. L'industrie nucléaire crée des emplois directs pour plus de 30 000 Canadiens. Les secteurs de technologie de pointe de l'industrie recherchent activement des marchés d'exportation pour leurs produits et services. La reprise de l'économie mondiale au lendemain de la dernière récession a déjà commencé à entraîner une hausse de la demande d'électricité. Une fois de plus, l'électricité est le véhicule de la croissance. Les compagnies de services publics projettent déjà d'augmenter leur capacité de production. Les ressources nucléaires, la technologie et les compétences canadiennes existent et n'attendent qu'à être utilisées. En saisissant les occasions qui se présentent, une industrie nucléaire reconnue peut contribuer de façon vitale au renouveau économique du pays. Nous faisons appel au gouvernement fédéral pour qu'il fasse figure d'autorité en encourageant la reconnaissance nationale et internationale de l'industrie nucléaire canadienne.

### Objet de ce mémoire

L'Association nucléaire canadienne (ANC) a préparé le présent mémoire en réponse au défi que le ministre des Finances, Michael Willson, a lancé aux Canadiens dans son document intitulé: "Une nouvelle direction pour le Canada". Nous voulons ainsi présenter le point de vue de l'industrie nucléaire canadienne vis-à-vis les questions des politiques et les possibilités qui s'offrent au pays. Dans un mémoire connexe, nous avons répondu à chaque point du document "Une nouvelle direction pour le Canada" du ministre fédéral. Ces mémoires de l'ANC témoignent de la volonté de l'industrie nucléaire à participer au défoat économique national.

## Comment se traduit la contribution de l'industrie nucléaire à l'économie canadienne?

### Uranium

Le Canada est le principal producteur d'uranium au monde (11 000 tonnes en 1984) et emploie dans cette industrie plus de 7 000 personnes. À l'avenir, les exportations d'uranium rapporteront au Canada plus d'un milliard de dollars par année. Nos réserves d'uranium non exploitées assurent notre position de meneur sur les marchés mondiaux jusqu'en l'an 2000 et au-delà. Elles représentent une ressource énergétique des plus précieuses pour le Canada. L'industrie minière de l'uranium mérite le soutien total du gouvernement dans ses efforts d'expansion sur les marchés national et international.

### L'électricité produite à partir de l'uranium

Notre réacteur CANDU dicte la norme mondiale en termes de rendement et de sécurité. Cette réussite est le fruit de nombreuses années de travail acharné. Le gouvernement fédéral a jusqu'à maintenant investi un total de 2,6 milliards de $ dans le développement des nombreuses facettes de l'industrie nucléaire. Le rendement de cet investissement est remarquable. En Ontario seulement, les économies cumulatives d'énergie réalisées depuis la mise en service de la centrale de Pickering en 1971 s'élèvent à quelque 2 milliards de $ et celles réalisées sur le marché des changes sont de l'ordre de 4 milliards de $. D'ici 1995, les économies réalisées grâce à toutes les centrales nucléaires en service en Ontario devraient atteindre chaque année 1 milliard de $ au niveau des coûts de production et 2 milliards de $ au niveau du marché des changes. Il ne fait nul doute que l'investissement initial du gouvernement dans la recherche et le développement a été plus que remboursé et qu'il continuera d'assurer un rendement satisfaisant aussi longtemps que les centrales CANDU suffiront à la demande croissante pour de l'électricité bon marché. L'électricité provenant des centrales nucléaires canadiennes est considérablement meilleur marché que celle produite à partir d'autres sources thermiques disponibles dans l'Est du Canada. L'électro-nucléaire mérite donc toute la considération qui lui est due dans les politiques énergétiques canadiennes.

### Les radio-isotopes en médecine et dans l'industrie

Le Canada s'est toujours montré maître dans l'art d'appliquer la technologie nucléaire à la médecine. Depuis la mise au point des machines de traitement du cancer au cobalt 60, une première mondiale, nous sommes devenus le plus important producteur de radio-isotopes destinés à la médecine nucléaire de diagnostic. En tant que premier producteur de cobalt 60, le Canada fabrique de l'équipement destiné à l'irradiation des aliments et des fournitures médicales et à d'autres applications industrielles. En 1984, l'EACL a exporté pour plus de 80 millions de $ de ces produits, contribuant ainsi à un effort humanitaire mondial. Les perspectives d'avenir dans ce domaine sont excellentes.

### Retombées économiques

L'industrie nucléaire fournit 31 000 emplois directs aux Canadiens (38 000 en 1981). Le travail de ces personnes injecte annuellement 3,6 milliards de $ dans l'économie du pays. À cet égard, le secteur nucléaire se compare aux industries nationales de la fonderie et du raffinage ainsi que de la fabrication d'équipement de télécommunication et de pièces automobiles.

La réussite de tous les projets reliés au réacteur CANDU et à l'exploitation, au traitement et au raffinage de l'uranium et leur contribution positive à l'économie nationale démontre le dynamisme et l'apport considérable de l'industrie nucléaire au secteur de l'énergie. Depuis 1970, l'industrie a construit 14 centrales nucléaires en Ontario, au Québec et au Nouveau-Brunswick. Elle a investi à cette fin plus de 14,5 milliards de $ en capital et quelque 100 000 années-personne dans la construction. En outre, sept mines d'uranium et deux usines de traitement ont vu le jour, représentant un investissement en capital de 3,1 milliards de $ et en construction de 12 200 années-personne. La centrale nucléaire d'Ontario Hydro à Darlington constitue le plus important projet énergétique distinct actuellement en chantier en Amérique du Nord. Tous ces projets de construction nucléaire ont engendré une énorme activité économique avec des retombées considérables. Il est donc tout à l'avantage du Canada de maintenir ce niveau d'activité au sein d'une industrie de cette importance, surtout à la lumière de ses réussites tant sur le plan économique que technologique.

## Quelles occasions d'affaires intéressantes s'offrent au Canada en matière d'énergie nucléaire? Quelle devrait être l'attitude du gouvernement?

1. L'exportation d'uranium et les centrales nucléaires productrices d'électricité.

   La demande d'électricité a repris sa courbe ascendante grâce à la reprise de l'économie mondiale au lendemain de la récente récession. L'AIEA estime que la capacité nucléaire installée à l'échelle mondiale aura doublé, peut-être même triplé, d'ici l'an 2000. Afin de prendre part à cet essor et de profiter de ses retombées, il est essentiel que le Canada:

(a) adopte une politique de commercialisation qui protège les contrats à long terme avec les producteurs d'uranium de l'Est du Canada, tout en trouvant de nouveaux marchés mondiaux pour le minerai des gisements à haute teneur de la Saskatchewan;

(b) continue d'encourager fortement les exportations de réacteurs CANDU en insistant sur l'excellente fiche de rendement de la filière de conception canadienne qui demeure un concurrent sérieux sur les marchés d'exportation. Le CANDU détient aujourd'hui 5% du marché mondial des réacteurs, et l'EACL estime que les centrales CANDU fourniront 6 GWe d'électricité en l'an 2000. L'EACL est confiante qu'un effort national concerté permettrait au Canada de s'approprier une part plus importante du marché potentiel, évalué pour cette période entre 21 et 29 GWe. Le financement demeure un

problème de taille et le gouvernement fédéral devrait encourager la mobilisation totale des ressources bancaires du Canada en vue de soutenir des exportations de grande valeur.

2. Exportation d'électricité produite dans les centrales nucléaires.

   L'exportation d'électricité aux États-Unis est un projet qui exige la participation du gouvernement fédéral afin d'assurer un climat propice aux échanges commerciaux de ce genre avec nos voisins du sud. À cette fin, il serait approprié que le gouvernement canadien résiste aux politiques protectionnistes des agences américaines, notamment le ministère américain de l'Énergie et la Federal Energy Regulatory Commission.

   On s'entend pour dire qu'un deuxième réacteur à Point Lepreau (Nouveau-Brunswick) pouvant exporter de l'électricité en Nouvelle-Angleterre stimulerait l'activité économique nationale et régionale, créerait des emplois en demande et contribuerait à l'accroissement des gains sur le marché des changes. Un tel projet serait si avantageux pour le Canada qu'il n'y a aucune raison pour ne pas le mener à bien. L'ANC fait appel au gouvernement fédéral pour qu'il étudie tous les obstacles à sa faisabilité et à l'amorce de la construction de Point Lepreau 2 en 1986. Le succès de Point Lepreau 1 démontre que les risques liés à ce projet peuvent être entièrement contrôlés. L'ANC demande donc au gouvernement fédéral d'accorder tout le soutien nécessaire à la réalisation de ce projet.

3. Le Canada pourra conserver sa position enviable en matière d'exportation de technologie nucléaire autre que pour la production électrique, moyennant des efforts soutenus de l'EACL en recherche et développement et en commercialisation. Notre contribution au mieux-être de l'humanité, principalement dans les pays en voie de développement, pourrait certainement profiter de programmes d'aide appropriés.

4. L'incitation du gouvernement fédéral à l'électrification de l'industrie par le biais du développement de l'option nucléaire aurait pour effet d'accroître la productivité en réduisant les dépenses d'énergie et, par le fait même, d'améliorer notre compétitivité, critère essentiel à la réussite sur les marchés d'exportation.

5. On évalue à plusieurs milliards de dollars la valeur du marché pour les industries de services nucléaires. Le gouvernement fédéral devrait participer, par le biais de l'EACL, aux efforts du secteur privé en vue d'exporter notre expertise en matière d'énergie nucléaire.

De l'avis de l'ANC, le gouvernement devrait revoir attentivement certaines de ses politiques ayant trait aux points suivants:

1. L'énergie nucléaire mérite une meilleure place et une plus grande reconnaissance au sein de la politique énergétique nationale. Étant donné que les provinces ont juridiction sur la production électrique, il est essentiel d'obtenir une excellente collaboration fédérale-provinciale dans les domaines de l'exportation d'électricité, de l'électrification industrielle, de l'interconnexion électrique et de la planification énergétique.

2. L'industrie nucléaire canadienne a toujours engagé la participation commune des secteurs privé et public, le gouvernement fédéral et les agences provinciales assumant le rôle principal. L'EACL joue depuis toujours un rôle clé dans l'industrie des réacteurs dont elle dirige encore aujourd'hui un certain nombre de secteurs importants. Face à l'incertitude des marchés à court et moyen termes, il est impératif que l'EACL englobe toutes les activités de l'industrie nucléaire afin de relever les défis à venir et assurer la survie du programme CANDU. Une réaction positive du gouvernement fédéral à l'appui des objectifs de l'EACL et de ceux de l'industrie serait des plus productives.

3. Il y a 40 ans, le Canada commençait à élaborer ses politiques d'exportation de l'uranium. Aujourd'hui, la production d'uranium est concentrée dans les mines de l'Ontario et de la Saskatchewan qui peuvent être considérées comme des entreprises totalement différentes avec un produit commun. Afin de maintenir l'équilibre précaire existant entre les diverses sources d'approvisionnement, nous recommandons vivement au gouvernement fédéral de ne pas modifier ses politiques d'exportation de l'uranium avant de consulter toutes les parties impliquées.

4. L'industrie nucléaire compte parmi les plus réglementées au pays. Sur la scène internationale, les garanties de sécurité et de non-prolifération du Canada sont des plus sévères. Cela désavantage les exportateurs canadiens face aux fournisseurs étrangers soumis à des politiques beaucoup moins strictes. Nous ne demandons pas au gouvernement de modifier ses garanties de sécurité, mais nous l'encourageons à continuer son travail d'uniformisation des pratiques commerciales régissant tous les pays fournisseurs de technologie nucléaire.

Au Canada, l'industrie nucléaire est réglementée par différentes agences fédérales et provinciales. Afin d'assurer la sécurité des travailleurs, de la population et de l'environnement, l'industrie se conforme à des règlements rationnels s'appuyant sur des recherches scientifiques et ayant démontré leur faisabilité économique. La méthode adoptée par le Canada en matière de réglementation consiste à établir des normes nucléaires à partir de recommandations internationales sur la sécurité. Tout détenteur d'un permis nucléaire est donc tenu de construire et d'exploiter son installation conformément à ces normes de sécurité. L'industrie nucléaire canadienne a toujours approuvé cette façon de procéder qui, à son avis, est de loin préférable aux systèmes utilisés dans d'autres pays. Malheureusement, on dénote

depuis quelque temps une tendance à la réglementation normative, les agences de réglementation établissant des limites et dictant à l'industrie la façon d'atteindre ces objectifs. Nous croyons que cette façon de procéder ne peut que nuire à l'industrie en minant sa productivité et sa position concurrentielle.

L'ANC prie le gouvernement fédéral de revoir le bien-fondé de ces normes de sécurité avec les gouvernements provinciaux, de fixer des objectifs à long terme et d'établir un programme de réglementation ordonné afin d'assurer la stabilité et l'uniformisation du procédé de réglementation nucléaire.

En résumé, le Canada possède une technologie nucléaire de renommée mondiale et une industrie de premier plan qui joue un rôle essentiel dans l'économie du pays. L'ANC demande au gouvernement de garantir à cette industrie un appui public sans réserves et des politiques qui lui permettraient de participer entièrement et de façon productive au renouveau économique du Canada.